

The present invention relates to an improved user interface for allowing control by a user that takes into account different user perspectives. For example, in using an image acquisition device, a novice has a different understanding of the concept of tone than that of an expert. For a novice, "tone" might be understood as no more than simple brightness/contrast control, whereas an expert might understand "tone" to refer to gamma or to the input/output characteristics of an editable tone curve. Thus, from the perspective of a novice, the user interface should provide for tone control with a simple brightness/contrast adjustment, whereas from the perspective of an expert, the user interface should provide for tone control with a fully editable tone curve. Generalizing this concept, it is advantageous for a user interface to provide plural different interfaces for a single control.

One conventional arrangement for providing a user interface with plural different interfaces consists of a property page having buttons corresponding to each different interface. When a button is selected, a separate window containing the corresponding interface is displayed. This window is "modal", which means that the user must make any desired adjustments within the window and exit the window before selecting another interface. Because this conventional arrangement requires the display of these modal

windows, this arrangement results in a user interface that is cluttered and unwieldy.

Another conventional arrangement for providing a user interface with plural different interfaces consists of plural different interfaces crowded onto a single property page in a property sheet. Thus, one property page might provide a contrast/brightness interface, a gamma interface, and an editable curve interface, all displayed at once. However, this conventional arrangement leads to a poor user interface because the property page becomes too crowded and cluttered if more than a few interfaces are provided.

Alternatively, a user interface might provide plural different interfaces corresponding to a single control through a property sheet having separate property pages for each different interface, (e.g., one property page displaying contrast/brightness adjustment, and another property page providing an editable tone curve). However, this arrangement requires too many property pages, making the user interface unwieldy and unattractive as well as confusing because the user may think that each property page actually provides a different control. In addition, in order to avoid inconsistencies, manipulation of one property page must be reflected in the other property pages, thereby violating a basic user interface design convention which requires that manipulation of one property page should not affect another property page.

The present invention addresses the foregoing problems by providing a property page that includes a control region for providing control and a button region having multiple buttons. An appearance of the control region is changed in response to user manipulation of the multiple buttons, with different appearances providing different interfaces for control.

By means of this arrangement, a user can select an appearance of the interface by manipulating the multiple buttons on the property page. The appearance of the property page is changed in response to the manipulation of the buttons, allowing the user to choose the interface most suitable to the user for utilizing control provided by the property page.

For example, a user interface according to the invention to control an image acquisition device may include a property page used for "Tone" control. The "Tone" property page includes a button region with plural radio buttons and a control region whose appearance is changed so as to provide different interfaces for tone control. The button region includes buttons for the following types of tone control: automatic, brightness/contrast, gamma, histogram, and editable curve. The appearance of the control region of the "Tone" property page is changed in response to user manipulation of these buttons. For example, when the gamma tone control button is selected, the appearance of the

control region is changed so as to display gamma tone control, such as control by a slide and a text box for selecting a gamma value and a transfer curve representing the effect of the gamma value on tone. Alternatively, when the editable curve tone control button is selected, an appearance of the control region is changed so as to display editable curve tone control, such as control by a text box for selecting special tone curves and a fully editable tone curve. Thus, the different appearances provide different interfaces for the control provided by the property page, in this case tone control.

More particularly, Claim 74 concerns a user interface comprising a property page providing an interface for a control, and at least first and second selection elements displayed in the property page, each of the at least first and second selection elements corresponding to a different appearance of the interface for the control provided by the property page, wherein a first appearance of the interface is provided, in the property page in response to selection of the first selection element, and a second appearance of the interface is provided in the property page in response to selection of the second selection element.

The art of record is not seen to disclose or to suggest the foregoing features of amended independent Claim 74. More particularly, the applied art is not seen to disclose or to suggest a property page providing an interface

wherein an appearance of the interface is different in response to selection of different selection elements that are displayed in the property page.

Rather, the applied art is seen to disclose multiple, different windows the appearance of which cannot be altered based on selection of an element in a window of the user interface. More particularly, the user interface described in the HP ScanJet User's Guide has a single appearance for each window (e.g., the "Options" and "Size Settings" windows). The HP User's Guide is not seen to provide selection elements that result in a different appearance of the "Size Settings" display of Figure 2-26 or the "Picture Adjustments" display of Figure 2-28 to be displayed. More particularly, Figures 2-26 and 2-28 in the HP ScanJet User's Guide are not seen to teach or suggest a property page providing an interface wherein an appearance of the interface is different in response to selection of a selection element that is displayed in the property page.

In view of the foregoing, amended Claim 74 is believed to be in condition for allowance. In addition, amended Claims 81, 88, 95 and 102 are also believed to be in allowable condition for at least the same reasons stated above, and such action is respectfully requested, because amended Claims 81, 88, 95 and 102 contain at least the same combination of features of amended Claim 74.

The other claims in this application are each dependent from the independent claims discussed above and are therefore believed patentable for the same reasons. Because each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

  
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